



Corres. and Mail

BOX AF

AF/2800
#10 B(CN),
7/11/03
arr

EXPEDITED PROCEDURE
RESPONSE UNDER 37 C.F.R. §1.116
GROUP ART UNIT 2876
PATENT
Atty. Docket: 1400-19 (1083)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants : BARKAN et al.

Examiner: Larry D. Taylor

Serial No. : 09/880,899

Group Art Unit: 2876

Filed : June 15, 2001

For : OMNIDIRECTIONAL LINEAR SENSOR-BASED
CODE READING ENGINES

MAIL STOP AF
P.O. Box 1450
Commissioner for Patents
Alexandria, VA 22313-1450

RECEIVED

JUN - 1 2003

TECHNOLOGY CENTER 2800

AMENDMENT UNDER 37 C.F.R. §1.116

Sir:

In response to a Final Office Action of the U.S. Patent and Trademark Office
mailed on May 20, 2003, please amend the subject application as follows:

IN THE CLAIMS:

Please amend Claims 1, 2, 11, 13, 21 and 23:

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8(a)

I hereby certify that this Amendment and any document referred to as enclosed herein is being deposited with the United States Postal Service as first class mail, postpaid in an envelope, addressed to Mail Stop AF, P.O. Box 1450, Commissioner for Patents, Alexandria, VA 22313-1450.

Dated:

June 26, 2003

Adrienne Fagan
(Name of Person Mailing Envelope)

Adrienne Fagan
(Signature of Person Mailing Envelope)

1. (Twice Amended) An apparatus for an optical code reader comprising:

 a first solid state photo sensor array having cells arranged in a line along a plane of the array for producing electronic signals corresponding to an image of at least a portion of a target optical code symbol;

 a second solid state photo sensor array having cells arranged in a line along a plane of the second solid state photo sensor array, planes extending from the planes of the first and second solid state photo sensor arrays form an intersecting angle with respect to each other, the second sensor array for producing electronic signals corresponding to at least a portion of a target optical code symbol; and

 electronic analog to digital converter means for converting electronic signals from at least one of said sensor arrays to bit content of a target optical code symbol to be read.

2. (Twice Amended) The apparatus of claim 1 further comprising a third solid state photo sensor array having cells arranged in a line along a plane of the third solid state photo sensor array, said plane of the third solid state photo sensor array forming an acute angle with respect to at least one plane of the first and second sensor arrays.

11. (Amended) The apparatus of claim 10 wherein the aiming beam producing means and the sensor arrays are formed on the same semiconductor die.

13. (Twice Amended) A sensor assembly for an apparatus for reading a target one-dimensional optical code symbol whose principle axis has an arbitrary orientation in a plane generally parallel to an image plane of the sensor assembly comprising:

 a first solid state photo sensor array having cells arranged in a generally straight line along a plane for producing an electronic signal corresponding to at least a portion of an image of the code symbol;

 a second solid state photo sensor array having cells arranged in a generally straight line along a plane of the second solid state photo sensor array for producing an electronic signal corresponding to at least a portion of an image of the code symbol;

 a third solid state photo sensor array having cells arranged in a generally straight line along a plane of the third solid state photo sensor array for producing an electronic signal corresponding to at least a portion of an image of the code symbol, wherein planes extending from the planes of the first, second and third solid state photo sensor arrays form intersecting angles with respect to one another;

 means for focusing images of the target code symbol on each of the three sensor arrays; and

 means for converting to digital form electronic signals from the sensor assembly.

21. (Twice Amended) An apparatus for an optical code reader comprising:

 at least three one-dimensional solid state sensor elements each having an array of cells, each array located along a plane, wherein the planes form an intersecting angle with respect to one another;

electronic analog to digital converters associated with each one-dimensional solid state sensor elements for converting electronic signals from the photo sensors to digital form; and

means for selecting a signal from one of the analog to digital converters representative of the data content of a one-dimensional target bar code whose principle axis is sufficiently aligned with the axis of the corresponding array to permit data to be extracted.

23. (Twice Amended) An optical code reader comprising:

a gun-shaped housing comprising a head portion containing a sensor assembly for reading an optical code located forward of and in the vicinity of an optical axis of a sensor assembly, said sensor assembly including at least two sensor elements each having an array of cells, each array located along a plane, wherein the planes form an intersecting angle with respect to one another, said housing further comprising a handle portion sloping backwardly and downwardly from the head portion, said handle portion having a trigger for actuating the optical code reader; and

a circuit board generally perpendicular to the optical axis of the sensor assembly extending through the head portion and through at least a portion of the length of the handle portion of the housing for carrying the sensor assembly.